

6-1945

# Osteopathic Medicine

Philadelphia College of Osteopathy

Follow this and additional works at: [http://digitalcommons.pcom.edu/osteopathic\\_medicine](http://digitalcommons.pcom.edu/osteopathic_medicine)



Part of the [History of Science, Technology, and Medicine Commons](#), and the [Osteopathic Medicine and Osteopathy Commons](#)

---

## Recommended Citation

Philadelphia College of Osteopathy, "Osteopathic Medicine" (1945). *Osteopathic Medicine*. Book 18.  
[http://digitalcommons.pcom.edu/osteopathic\\_medicine/18](http://digitalcommons.pcom.edu/osteopathic_medicine/18)

This Book is brought to you for free and open access by the College Collections at DigitalCommons@PCOM. It has been accepted for inclusion in Osteopathic Medicine by an authorized administrator of DigitalCommons@PCOM. For more information, please contact [library@pcom.edu](mailto:library@pcom.edu).

# OSTEOPATHIC MEDICINE

Vol. III

June, 1945

No. 2

## CONTENTS



The Use of Continuous Caudal Analgesia in 500 Obstetrical Cases: A Preliminary Report .....	37
<i>Julian L. Mines, III and Edward A. Holroyd</i>	
The Use of Continuous Caudal Analgesia for Cesarean Section: A Report of 53 Cases .....	46
<i>Julian L. Mines, III and Edward A. Holroyd</i>	
Present Day Considerations in the Treatment of Gonorrhea .....	49
<i>H. Willard Sterrett</i>	
A Study of Stillbirth Deliveries .....	54
<i>Edward A. Holroyd</i>	
Spontaneous Rupture of the Urinary Bladder: Autopsy Report of a Case .....	59
<i>Otterbein Dressler</i>	
Obstructive Jaundice Due to Carcinoma of Ampulla of Vater: Autopsy Report of a Case .....	62
<i>Otterbein Dressler and Boyd B. Button</i>	



Published quarterly by the  
PHILADELPHIA COLLEGE OF OSTEOPATHY  
48th and Spruce Streets, Philadelphia 39, Pa., U.S.A.

# OSTEOPATHIC MEDICINE

*The official publication of the Faculty of the  
Philadelphia College of Osteopathy*

---

*Editor:* GUY S. DEMING

## *Editorial Board*

GUY S. DEMING, *Chairman*

FREDERICK A. LONG

PAUL T. LLOYD

OTTERBEIN DRESSLER (*Ex-officio*)

## *Advisory Board*

WILLIAM BALDWIN, JR.

D. S. B. PENNOCK

ANGUS G. CATHIE

JOSEPH PY

H. WALTER EVANS

C. HADDON SODEN

RALPH L. FISCHER

H. WILLARD STERRETT

J. ERNEST LEUZINGER

WILLIAM S. SPAETH

*Business Manager:* MR. LOUIS G. SCHACTERLE

---

OSTEOPATHIC MEDICINE is issued quarterly, one volume of four issues being published each year. The subscription price is \$4.00 per year, payable in advance. Single copies \$1.00.

Address all correspondence relating to business matters and subscriptions to Mr. Louis G. Schacterle. Address all other correspondence to the editor. Both addresses 48th and Spruce Streets, Philadelphia 39, Pa.

Copyright 1945, by Philadelphia College of Osteopathy

Made in U. S. A.



# THE USE OF CONTINUOUS CAUDAL ANALGESIA IN 500 OBSTETRICAL CASES: A PRELIMINARY REPORT \*

JULIAN L. MINES, III

*Resident Obstetrician*

and

EDWARD A. HOLROYD

*Assistant Resident Obstetrician*

*Osteopathic Hospital of Philadelphia*

## *Introduction*

Scientific advances have given us progressively better forms of anesthesia and analgesia, but until the advent of continuous caudal analgesia, no method offered had so nearly satisfied the requirements of a successful obstetrical analgesia.

It is claimed that this method most nearly approximates the ideal analgesia for labor and delivery because it effects a blockade of pain impulses originating in the organs concerned with the physiology of childbirth, and does so without any apparent harm resulting to the maternal or fetal organisms. It is also claimed that it permits normal, uninhibited progress of labor, facilitates delivery by affording greater relaxation to the lower uterine segment, cervix and perineum, minimizes blood loss, reduces the incidence of depressed infants, encourages a more rapid and natural third stage and hastens postpartum recovery.

The purpose of this preliminary report is to record the experience at the Osteopathic Hospital of Philadelphia in the use of continuous caudal analgesia in 500 obstetrical cases between January 1944 and April 1945.

In 444 cases (88.8 per cent) there was complete pain relief. In 37 cases (7.4 per cent) there was partial success, so designated because the patient experienced some discomfort, or required supplementary anesthesia. In 19 cases (3.8 per cent) there was complete failure, due to inability to insert the needle properly, to subarachnoid puncture, to persistent bloody taps, or to other causes.

## *Preparation for Childbirth*

The bearing of offspring, while a completely natural and normal procedure, is fraught with fear for almost every woman. Continuous caudal analgesia will do much to eliminate this fear. While as yet few expectant mothers are privileged to receive the benefits of this procedure, those who

---

\* Read before the May 1945 meeting of the Philadelphia County Osteopathic Society.



are, should be properly prepared mentally during the prenatal period. The obstetrician should take time to explain to his patients the advantages accruing from this procedure. At the same time, he should refrain from promising an entirely painless labor, because to be completely successful, continuous caudal analgesia should not be initiated until labor is well established. By removing her fear, much can be accomplished in psychologically preparing the patient for the early discomforts of labor.

It has been difficult to single out patients psychologically unsuited for continuous caudal analgesia. Many seemingly uncooperative patients readjust themselves when the pain of labor has been removed, but women who do not wish to be conscious at the time of their child's birth are unsuitable subjects, and should not be urged to accept this method of pain relief.

### *Induction of Analgesia*

The method of administration introduced and developed by Drs. Hingson, Edwards, and Southworth, Surgeons, U. S. Public Health Service and described by Southworth and Hingson,<sup>1</sup> was the procedure adopted in this series of cases. The equipment used was the standard Becton, Dickinson continuous caudal apparatus with the Hingson malleable steel caudal needle; the drug, 1.5 per cent metycaïne (Lilly) in Ringer's solution.

Certain conditions in expectant mothers which preclude the use of continuous caudal analgesia<sup>2</sup> governed the selection of cases on which this method was attempted. (1) Deformities or disease of the spine, (2) syphilis of the central nervous system, (3) tumors which narrow the spinal canal, (4) epilepsy, (5) hysteria, (6) local infection (bacterial or fungous), at the induction site, (this includes real or potential pilonidal cysts), (7) profound anemia and dehydration, (8) placenta praevia, unless used for immediate cesarean section, (9) abruptio placenta, (10) history of metycaïne sensitivity (rare).

Determination of the correct time to begin induction is of paramount importance to the satisfactory management of a case under continuous caudal analgesia. Some of the failures experienced early in this series, were attributed to starting the analgesia before labor was well established. In some of the cases the patient developed a drug tolerance which rendered the caudal analgesia ineffective for further labor and delivery. Psychologically, early induction has proven unwise. An extended labor, during which the patient is not permitted complete freedom of motion, often produces irritability, resulting in an uncooperative patient. If the induction is started before the presenting part is firmly engaged, the progress of labor may be retarded because of the position the patient must assume. Since timing is of such importance, continuous caudal analgesia should be administered by, or under the supervision of, an experienced obstetrician.

Due to the extreme vascularity of the anterior wall of the sacral canal, blood spaces were encountered by the advancing needle in nearly 50 per cent of the cases. Most of these bloody taps were overcome by a slight withdrawal of the needle and subsequent advancement which avoided the vascular zone. The needle stylet was then reinserted in the needle, and time allowed for coagulation before proceeding with administration of the drug. Another method of overcoming the difficulty was to substitute a three-inch needle for the two and a half inch needle initially used. This carried the needle point beyond the opened venous sinus. Occasionally, when this complication arose, the patient experienced vertigo, tinnitus, momentary syncope, tingling of fingers and lips, bradycardia, or noticed a metallic taste. These symptoms counseled caution, but did not compel abandonment in most cases. There were 4 cases in which persistent bloody taps were encountered, making it impossible to administer the drug.

In two cases low lying duras were responsible for subarachnoid punctures. In the first case, when the stylet was removed from the needle after insertion, a dripping of free spinal fluid was noted, and the attempt to administer caudal analgesia was abandoned. In the second case, the needle point apparently lodged between the dura and arachnoid maters, making aspiration of spinal fluid impossible, but upon injection of the 8 c.c. test dose of metycaine, there was sudden release of back pressure indicating puncture of the arachnoid mater, which permitted passage of the drug into the spinal fluid reservoir. Immediate aspiration was made, recovering 4 cc. of mixed fluid. This patient did not experience complete motor paralysis of the lower extremities, but did have a sensory nerve block, extending to the costal margin within 5 minutes. She was delivered three hours later of a living, vigorous infant, spontaneously, without experiencing any discomfort from the time of administration.

In three cases the unusual occurrence of a divided sacral canal was encountered. After induction, a complete one-sided analgesia was produced. By inserting an additional needle through the sacral hiatus, directed toward the unblocked side, the barrier of the sacral septum was overcome. By introducing the medication through the two needles, satisfactory levels were maintained bi-laterally.

The use of pre-induction sedation had to be resorted to in many instances to ease the patient during the early discomforts of labor. The average case required but 100 mgm. of demerol with 3 grains of seconal. Premedication in cesarean sections has been discontinued, because it was observed that the amnesic patient seemed unable to respond accurately to preoperative tests for levels of analgesia.

### *Management of the Patient*

The management of a patient under continuous caudal analgesia presents many difficulties that can be coped with only by diligent perseverance



on the part of the operator. Many of these hazards arise only in cases running over a prolonged period of time. The most successful cases, and those presenting the fewest difficulties, were those which ran an average of three hours.

The obese patient presented the greatest problem of management. These women more quickly tired of staying in the lateral recumbent position, and satisfactory levels of analgesia were difficult to maintain. Continuous caudal analgesia is definitely contraindicated in the extremely obese patient, but if it is used on a moderately obese woman, it should be started only after the termination of the first stage of labor.

The problem most frequently arising in the average case was the occurrence of unilateral pain during a uterine contraction. This usually was felt on the side opposite from the one on which the patient was lying. This was overcome in most cases by turning the patient to her other side. If, after turning, this one sided analgesia persisted, the substitution of a three-inch needle for the two and a half-inch needle made it possible to maintain the analgesia satisfactorily. An explanation for this may be that the longer needle advanced beyond an area of coagulated blood which interfered with proper distribution of the drug administered. In cases where the original level of analgesia descended on both sides, and failed to rise after additional metycaine was injected, the same longer needle technique was employed with good results.

In only two instances was it necessary to discontinue the procedure because of true uterine inertia. It was felt that other cases of apparent inertia occurred only when the level of analgesia included the tenth dorsal spinal level or above. In these patients, when the level was permitted to drop a segment or more, labor progressed normally.

One difficulty occasionally met was clogging of the needle with blood fibrin after prolonged administration. This was usually overcome by reaming the needle with a sterile stylet to dislodge the clot. In other cases satisfactory results were obtained only with the insertion of a new needle.

Initial fall in blood pressure up to 20 mm. of Hg occurred in many cases. Recently this symptom has been controlled by the prophylactic, subcutaneous injection of 10 mgm. of methedrine hydrochloride,\*\* at the inception of analgesia. This vasopressor substance has seemed to produce a more alert patient during labor, and at the time of delivery.

Itching and burning of the skin areas supplied by the nerves blocked was noted by four patients. This may be explained either as an incomplete nerve block, resulting in the sensation of cutaneous pain, or the existence of a drug idiosyncrasy in the patient.

---

\*\*Furnished this institution for experimental purposes by Burroughs, Wellcome & Co. (U. S. A.) Inc., New York, N. Y.



Varying degrees of motor loss were found in this series, ranging from complete freedom of motion to almost complete motor paralysis during the course of the analgesia. No sequelae resulting from prolonged nerve inhibition were noted except in two cases where occasional faint tingling sensations in the lower extremities were experienced for a period of several weeks.

The total amount of medication necessary to maintain a patient pain free, once analgesia was established, was purely individual, and the frequency of injection was varied according to need.

It was found that the parturient being managed under continuous caudal analgesia required frequent catheterization to prevent excessive bladder distension, and the possible subsequent postpartum urinary retention.

Rectal examinations during the first stage of labor were greatly facilitated by the extreme relaxation of the tissues involved. The patients experienced no discomfort at this time, and a more accurate estimation of the progress of labor was possible.

There were 21 breech presentations in this series, with no fetal mortality. The ease of management under continuous caudal analgesia should have a favorable effect on the relatively high fetal death rate usually experienced with this type of delivery.

Because of the muscular relaxation achieved with this type of analgesia, perineal repair was greatly simplified.

With the exception of 4 cases of adherent placentas, which were manually extracted, all placentas were detached and expelled naturally within an average period of 5 minutes.

### *Observations*

In spite of the variability of the human sacrum, there were only 5 cases (1 per cent) in this series in which it was impossible to insert the needle properly. There were no instances of needle breakage. For this, credit is given the Hingson caudal needle, which was used exclusively.

Several very unusual presentations were managed successfully with the aid of this analgesia. A primipara was delivered of an 8 pound 14 ounce living infant in good condition by the application of forceps to the fetal head, after previous extraction of the right arm. The ease with which this maneuver was accomplished was attributed to the unusual relaxation of the maternal soft parts produced by caudal analgesia. A 5 pound infant of approximately 34 weeks of uterine gestation was easily delivered with a presenting hand and foot complicating a cephalic presentation. The hand and foot were replaced and the infant was allowed to deliver spontaneously. This abnormal fetal position was probably due to uterine distortion resulting from old pelvic inflammatory disease. In none of the 21 breech extractions recorded was it necessary to apply forceps to the after coming head. It was not felt that the incidence of



posterior occiput, and transverse occipital arrests was significantly increased, as previously reported by other operators.

Although there was no accurate measurement made of blood loss, it was evident that loss in nearly all cases was considerably less under caudal analgesia than with any other method for the control of pain. In only two instances was it necessary to employ uterine packing. The routine use of oxytocics, after completion of the third stage, has been discontinued in this hospital.

During the past five years, it has been customary in this hospital to transfuse every patient delivered by cesarean section, with 500 cc. of whole blood. In the 51 patients in this series who were sectioned, transfusions were considered necessary in only two cases. It was noted that patients who had been given a test of labor before having a cesarean section, lost less blood than those who were sectioned before labor started. An explanation for this may be that a rhythmically contracting uterus is better able to involute than one of a patient who has not experienced labor.

Only three complications caused any concern in this series. One patient, who during the first hour, had received 107 cc. of 1.5 per cent metycaine in an attempt to rectify one-sided analgesia, had a rapid rise of the analgesia level to the foramen magnum when placed on her back for delivery. Voluntary respiratory movements were impossible, and she apparently could not speak. Artificial respiration and inhalation of oxygen were instituted, and maintained for forty-five minutes, by which time the level presumably descended to a point which enabled the patient to breathe unaided. At no time did her blood pressure or pulse rate show significant changes, and she was delivered of a living child in good condition by outlet forceps. The second case was complicated by a post sacral cellulitis which was not evident until two weeks postpartum. Cultures from this area were sterile, and it was believed that the tissue reaction was one resulting from the injection of 20 cc. of metycaine solution behind the sacrum at the time of induction. Her recovery was rapid and satisfactory after drainage and radiation therapy.

A second case of post sacral cellulitis became apparent three and one-half weeks postpartum. Cultures demonstrated the presence of non-hemolytic streptococci. Rapid recovery followed incision of the area and the employment of radiation therapy.

There was only one patient who complained of postpartum headache, and a few who complained of severe backache for three or four days. In the majority of cases, postpartum recovery was hastened and uneventful. A possible contributing factor was the ability of the patients to take nourishment during the entire course of the analgesia. Most patients were permitted a general diet immediately after delivery.

One stillbirth of 28 weeks of uterine gestation was probably due to prematurity and immaturity. Another premature infant of 26 weeks was born of a mother suffering a chronic pyelonephritis. One full term still-born infant was delivered from a mother with a history of previous still-

birth (no Rh determination was made in this case). The fourth stillbirth was delivered by elective cesarean section. This child was a hydrocephalic monster, demonstrated by routine X-ray examination.

One child, upon autopsy, was proven to have died of a congenital cardiac anomaly during the first hour of extrauterine life. Another baby died 12 hours postpartum as a result of extensive atelectasis. One infant expired in 12 hours, but permission for autopsy was not granted. The mother of this child received a total amount of only 50 cc. of metycaine within a period of 4 hours. Because of this, it was felt that continuous caudal analgesia was not a direct cause of death. One child lived for 7 days postpartum, and because no permission was granted for a post mortem examination, the cause of death was undetermined.

Tables 1, 2, and 3 summarize the series of 500 cases, of which 323 were primiparas and 177 were multiparas.

TABLE 1

	TOTAL NUMBER OF CASES	VAGINAL DELIVERIES	CESAREAN SECTIONS
	500	449	51
Complete success	444 (88.8%)	399 (88.9%)	45 (88.3%)
Partial success	37 ( 7.4%)	32 ( 7.1%)	5 ( 9.8%)
Failures	19 ( 3.8%)	18 ( 4.0%)	1 ( 1.9%)

TABLE 2

TYPES OF DELIVERIES		OBSTETRICAL COMPLICATIONS		COMPLICATIONS OF ANALGESIA	
Cephalic	428	Placenta praevia	1	Subarachnoid puncture	2
Forceps	266	Abruptio placenta	1	Postsacral cellulitis	2
Spontaneous	162	Preeclampsia	1	Persistent bloody taps	4
Breech	21	Adherent placenta	4	Inability to insert needle	5
Cesarean	51				

TABLE 3

		VITAL STATISTICS	
Maternal deaths	0	Stillbirths	4
		Neonatal deaths	4

### *Summary and Conclusions*

1. A series of 500 cases in which continuous caudal analgesia was attempted is reported.
2. Continuous caudal analgesia seems to be the most satisfactory method of obstetrical analgesia to date.
3. Administration should be by an obstetrician or an anesthetist properly trained in this procedure.
4. Correct timing of induction is necessary to successful management.
5. Rectal examinations are facilitated.



6. Difficult presentations are more easily managed.
7. Perineal relaxation is conducive to easy repair.
8. Blood loss is minimized.
9. The number of depressed infants is noticeably decreased.
10. The amount of metycaine solution necessary is variable.
11. Postpartum recovery is hastened.

We wish to acknowledge the cooperation of Dr. Francis J. Smith, head of the Department of Anesthesiology, Osteopathic Hospital of Philadelphia.

### *Discussion*

Robert A. Hingson, Surgeon, U.S.P.H.S.\*

The accurate, scientific report in the study by Drs. Mines and Holroyd indicates an important advance in the conquest of obstetric pain.

From the sociological and psychological viewpoint of motherhood, this is just as important as from the obstetrical and anesthesiological viewpoint of the physician.

A critical analysis revealing no maternal mortality and reduced maternal morbidity with only four stillbirths and four neo-natal deaths in 500 cases emphasizes the relative safety of this procedure in skilled hands. Its efficiency in providing 88.8 per cent of patients total relief and 7.4 per cent of patients partial relief during established labor and delivery and for cesarean section indicates its value as the most effective control of pain in childbirth in the hands of those physicians who expend the time in mastering and utilizing the principles of continuous caudal analgesia.

Yet, that there are ten major groups of contra-indications, that there are technical, anatomical, and pharmacologic difficulties even in experienced hands reveals that this method has its own peculiar hazards from which the unsuitable patient should be protected.

Already more than 100,000 American women have been successfully delivered with this technic. The fact that 500 of this number have been managed by the authors in the Osteopathic Hospital of Philadelphia with such excellent results accords them a unique role as pioneers in the safe, total conquest of pain.

---

\* Contributed by mail after the paper had been presented before the Philadelphia County Osteopathic Society.

The emphasis of this paper to the profession should go behind the scenes where the authors first spent months of anatomical dissection, neurological study, physiological and pharmacological investigation, and finally cautious application of this new principle until they were able to proclaim confidently a new obstetrics which not only provides parturient comfort—but which is more important—salvages maternal blood and protects the newborn from the effects of transplacental narcotization.

### *Bibliography*

<sup>1</sup> Southworth, J. L., and Hingson, R. A.: *Ann. Surg.*, 118:946-954, No. 6, Dec., 1943.

<sup>2</sup> Hingson, R. A.: *Contraindications and Cautions in the use of Continuous Caudal Analgesia*, *Amer. Jour. Obstet. and Gynec.*, 47:718-721, No. 5, 1944.

Hingson, R. A., and Southworth, J. L.: *Continuous Caudal Analgesia*, *Amer. Jour. Surg.*, 58:92-96, 1942.

Hingson, R. A., and Edwards, W. B.: *Continuous Caudal Anesthesia during Labor and Delivery*, *Anesth. and Analg.*, 21:301-311, 1942.

Hingson, R. A., and Edwards, W. B.: *Continuous Caudal Analgesia in Obstetrics*, *J.A.M.A.*, 121:225-228, 1943.

Lull, C. B., and Hingson, R. A.: *Control of Pain in Childbirth*. 1st ed. Philadelphia, J. B. Lippincott Co., 1944, pp. 167-203.

Hingson, R. A., and Edwards, W. B.: *Continuous Caudal Analgesia: An analysis of the first ten thousand confinements thus managed with the report of the authors' first one thousand cases*, *J.A.M.A.*, 123:538-546 (Oct.) 1943.



## THE USE OF CONTINUOUS CAUDAL ANALGESIA FOR CESAREAN SECTION: A REPORT OF FIFTY-THREE CASES

JULIAN L. MINES, III

*Resident Obstetrician*

and

EDWARD A. HOLROYD

*Assistant Resident Obstetrician*

During the past century improved surgical techniques have materially reduced the percentage of deaths due to sepsis following cesarean section. The other great danger, hemorrhage, has been combated through the more and more frequent use of supportive measures such as prophylactic whole blood and plasma transfusions. In spite of these precautions, approximately 7 per cent of the deaths following cesarean section are attributable to hemorrhage. We believe that the type of analgesia employed has a great bearing on the amount of blood lost.

Since the development of continuous caudal analgesia by Hingson, Edwards, and Southworth,<sup>1, 2</sup> its use in cesarean sections has greatly minimized blood loss. This is explained by Cleland's<sup>3</sup> clarification of the uterine nerve supply. Proper management of this type of analgesia will permit the uterus to maintain its normal tonicity and its inherent ability to contract because the motor nerves to the uterus are substantially unaffected by the analgesic drug. After extraction of the placenta, involution of the uterus is very rapid, and it is not uncommon to have a measured blood loss under 100 cc.

Another advantage offered by continuous caudal analgesia is the absence of depression in infants when delivered. Because of this, in delivery by cesarean section, rapid extraction of the infant, and immediate aspiration of the upper respiratory passages is important. These babies breathe almost instantly.

Contrary to the consensus of opinion, we have found that preoperative sedation is not required in the average case. It is, however, indicated for the apprehensive patient. We have found that patients who have received sedation have a dulled perceptive sense which interferes with an accurate estimate of the analgesic level.

The analgesic drug used in this series of cases was  $1\frac{1}{2}$  per cent mety-caine in Ringer's solution, administered with a  $2\frac{1}{2}$  inch Hingson caudal needle and a standard B-D continuous caudal analgesia outfit. After properly preparing the patient, an initial dose of 8 cc. of the solution was injected and 10 minutes allowed to elapse to rule out subarachnoid puncture. If this test was satisfactory, 22 additional cc. were injected and 5



minutes later 30 cc. were added, making a total initial dose of 60 cc. The area surrounding the needle site was then coated with a 10 per cent sulfathiazole ointment and a small sterile dressing applied. The patient was then placed carefully on her back, allowing the needle and apparatus to remain in place, in order that additional metycaine could be injected in the event of prolonged surgery. The average total amount of  $1\frac{1}{2}$  per cent metycaine necessary was 90 cc.

Early in this series most of the patients showed an initial drop in blood pressure of 40 mm. of Hg or more following the injection of metycaine. Since this degree of hypotension introduces a risk of fetal anoxia, measures were taken to combat it. At first ephedrine sulfate was used, and often the patient's legs were elevated to drain some of the blood pooled in the dilated blood vessels, toward the heart. Recently we have maintained satisfactory levels of blood pressure by the prophylactic use of 10 mg. of methedrine injected subcutaneously at the time of induction of analgesia. Immediately after extraction of the child, a rise in blood pressure of approximately 25 mm. of Hg was regularly observed.

The surgical technique employed with continuous caudal analgesia had to be modified for complete effectiveness, as peritoneal tugging and insertion of laparotomy sponges into the peritoneal cavity caused some discomfort to the average patient. Routine post operative sedation consisted of  $\frac{1}{3}$  of a grain of pantopon, or  $\frac{1}{4}$  of a grain of morphine sulfate, administered immediately after surgery.

In this series of fifty-three cases there were forty-six patients (86.8 per cent) who were sectioned successfully without the need for any form of supplementary anesthesia. In five cases (9.5 per cent) it was necessary to administer  $1\frac{1}{2}$  to 3 gm. of pentothal sodium intravenously after delivery, because these patients were unsuitable subjects for surgery while conscious. Two cases (3.7 per cent) were considered complete failures because of unilateral analgesia which could not be corrected. In both instances caudal analgesia was discontinued in favor of a general anesthetic.

There was no maternal mortality in this group of cases. The post operative course was believed to be more satisfactory than that of patients who received general anesthesia for cesarean sections. There were no stillbirths in this series, but there were 3 neonatal deaths. The first of these exhibited hydrocephalus and spina bifida, and expired a short time after delivery. The second child was a premature infant with atelectatic lungs. This child expired in twelve hours. The third baby was three months premature and died within seven days.

### *Summary*

1. Fifty-three cesarean sections managed under continuous caudal analgesia are reported.
2. Blood loss is minimized.
3. Incidence of depressed infants is lessened.

4. Preoperative sedation should not be a routine measure.
5. The average amount of  $1\frac{1}{2}$  per cent metycaine used per case was 90 cc.
6. Methedrine as a vasopressor has proven satisfactory.
7. Gentle handling of tissues during surgery is necessary under continuous caudal analgesia.
8. Continuous caudal analgesia alone was successful in 86.8 per cent of cases.
9. Post operative recovery is hastened.
10. Patients must be psychologically suited.

### References

- <sup>1</sup> Hingson, R. A., and Edwards, W. B.: Continuous caudal anesthesia during labor and delivery. *Anesth. and Analg.*, 21:301-311, 1942.
- <sup>2</sup> Southworth, J. L., Edwards, W. B., and Hingson, R. A.: Continuous caudal analgesia in surgery. *Ann. Surg.*, 117:321-326, 1943.
- <sup>3</sup> Cleland, J. G. P.: Paravertebral anesthesia in obstetrics, experimental and clinical basis. *Surg., Gynecol. and Obstet.*, 57:51, 1933.



## PRESENT DAY CONSIDERATIONS IN THE TREATMENT OF GONORRHEA

H. WILLARD STERRETT

*Professor of Urology*

The treatment of any disease, including gonorrhea, should not be static. From time immemorial the problem of gonorrhea and its ravaging effect on the human, as well as on social economy, has been a fascinating one. Much has been learned since the time of Hunter who confused the two great scourges of lues and gonorrhea, considering them different clinical manifestations of the same disease, to today when lay persons think of gonorrhea as being "nothing worse than a bad cold."

Between these two extremes there is a course which is correct, though somewhat difficult to follow because we have lost sight of Ricord's dictum that: "Gonorrhea begins and God alone knows where it ends." Much of the carelessness in treatment is due in part to the spectacular advances in therapy which have been made in recent years. Some of these advances are real, but some are only apparent because of the fact that the disease tends to be self-limited, and that many cases get well in spite of, rather than because of the therapy employed.

Urologists of this generation well remember the long list of dyes which were proposed for the cure of this disease. The writer well recalls the rainbow hues of the urine from the use of methylene blue, yellow from acriflavine, red from pyridium, and so on. We recall the use of mercurochrome, both locally as well as intravenously, but like all others it had its little day and was silently lost in oblivion.

Not until the advent of sulfanilamide did dawn begin to break on a dark and gloomy night of failure. It was but natural that many extravagant claims were made, as well as many mistakes. Much was to be, and is yet to be learned regarding the action of the sulfonamides not only on the gonococcus, but also on the human system as a whole. With the immediate and widespread use of sulfanilamide by both trained and untrained physicians it was inevitable that serious accidents would occur. Moreover, after large numbers of cases were treated and properly followed up, it was found that we could expect only about 50 per cent cures with this drug. Its side effects too, were severe, and further search was made for a newer form of the same family which might be safer and more efficacious. There followed in rapid succession sulfapyridine, much too dangerous for routine use, sulfathiazole, sulfacetimide, and a long line of similar preparations.



In this group, sulfathiazole has been proven the equal in clinical results of any, besides having the advantage of being somewhat less toxic, and certainly less expensive. We may therefore state that at the moment this drug should probably be the spearhead of attack for the average case. If properly used we may expect cures in approximately 85 per cent of cases, provided the relation between physician and patient is one of mutual understanding and cooperation.

Much of the success of sulfathiazole therapy depends on adequate dosage in the beginning of treatment. When small dosages are used the patient is quite apt to become sulfonamide resistant. Various rules have been proposed for dosage, and no absolute rules can be laid down, but a perfectly acceptable schedule calls for administering 4 gm. daily for two days (divided into 4 doses per day), and then reducing the amount to 0.5 gm. 4 times daily for 6 days. If cure is to follow it will almost certainly be manifest by the time the patient has taken 20 gm. Rarely will the continued administration of the same drug, or the change to another sulfonamide, be successful if improvement has not been secured in that time. Occasionally, however, if the patient is taken off the drug entirely, given a chance to rest for a few days, and then given an intensive course, a clinical response may be experienced. In any event, it is important in administering any of the sulfonamides, to keep in mind that their solubility is directly proportional to the alkalinity of the urine. As the urine approaches a pH of 7.5 reasonable safety may be expected. Any of the sulfonamides will precipitate into crystalline form with serious effect if this dictum is overlooked. A high fluid intake is also imperative. In the event that urinary suppression supervenes, immediate cessation of the drug is called for, and the immediate lavage of the kidney with a ureteric catheter is demanded. Failure to do this early may result in a fatal outcome, particularly if the ureter becomes jammed with crystals, though even in this case, if a nephrotomy is resorted to, death may be averted. It should always be borne in mind that these drugs are dangerous, and that their administration must have the constant supervision of the physician.

Resistance to sulfonamide therapy is becoming more and more evident. In a recent article, Doolittle and Marshall raise the question as to whether the increase is due to the eradication of sulfonamide sensitive strains of the gonococcus, and the relative increase of resistant strains, or whether the almost universal habit of administering sulfonamides for minor infections, might not desensitize the body defense mechanism.

With the advent of penicillin our approach to the management of gonorrhea has been greatly modified. Certainly results have been spectacular, and this amazing therapy has given rise to the belief in some quarters that all our troubles are over. But therapeutic procedures employing penicillin are not yet standardized. Much time must elapse, and many

controlled experiments must be carried out before final evaluation of this brilliant addition to our therapeutic armamentarium is possible.

While results seem to satisfy the most critical observer, the technical difficulties of administering penicillin in a measure prevent its universal adoption as a routine measure. Possibly the present experimental work being done on the oral administration of the drug will help remove these difficulties. At present, however, since the drug must be administered by the intramuscular or intravenous route, it cannot be employed for home treatment, except in certain rare instances. While the administration of penicillin is not necessarily a hospital procedure, its use does present some questions to the practitioner who is not usually able to administer the drug personally, along accepted lines.

Variation in dosage is natural, though in large series of sulfonamide resistant cases it has been found that the administration of 10,000 Oxford units every three hours has proven highly satisfactory. While the writer has not had the number of cases reported by the Army and Navy, he has found that smears were negative by the time the patient had received 40,000 units, although in every instance a total of 100,000 units were administered.

In a recent article in the *Journal of the American Medical Association* the inadequacy of standardized dosage was stressed. In reporting 219 cases the conclusions reached were that clinical cure was not necessarily bacteriological cure. While 70 per cent of the cases were cured with 100,000 units or less, the dosage advocated was from 200,000 to 300,000 units, 20,000 being administered every 3 hours.

In an article by Raines, Barrett, and Galt, they stated that their criteria for the use of penicillin was failure to respond to 2 courses of sulfonamide in 20 gm. total dosage, and the finding of positive smears and culture. In experimenting with dosages they found that 50,000 units given in 4 hours showed twice as many failures as when the drug was administered over a period of 12 hours. Ten cases were treated by administering 100,000 units in divided doses of 10,000 units every hour. All 10 cases were cured.

Ezickson states that he has treated a number of cases by the administration of 50,000 units early in the morning and 50,000 units late in the evening. Though his number of cases was too limited to warrant definite conclusions, if this procedure could be adopted it would solve the problem for the general practitioner.

Much more might be said, but the purpose of this paper is to present a brief summary of recent experience, and to give the general practitioner a practical basis for the treatment of gonorrhea. The physician in general practice will be well advised to adhere to a middle of the road course, and to follow some principles which have shown definite results. But he should realize that every case of gonorrhea is an individual case, and that treatment should be administered with respect to that individual, rather than in accordance with some arbitrary schedule.



First, therefore, diagnosis of the disease must be established by smear or culture. Culture is being depended on more and more for accuracy, as smears too frequently are negative. Diagnosis is essential, for if the infection is non-specific, it is doubtful if it will respond to either the sulfonamides or to penicillin. Having established that the infection is due to the gonococcus, sulfonamide therapy is instituted (sulfathiazole is preferred), and the patient is watched carefully for a week. In the event that response is not secured, arrangements are made for the administration of penicillin. If desired, now that penicillin is available for general civilian use, this drug may be used initially. The vial of powder is dissolved in 20 cc. of water and 2 cc. (10,000 units) administered intramuscularly at each dose. The usual site of injection is the deltoid muscle, although any muscle may be used. After 10 injections have been given, smears are taken from the urethra and prostate, and examined for gonococci. A considerable number of smears will show organisms other than the gonococcus, for a number of bacteria are not sensitive to penicillin. If smears are negative a culture is made, and the patient placed under supervision, and a rigid hygienic regime continued. The customary tests for cure are made at weekly intervals for a month longer, and if passed we may assume that a cure has been effected. In the event that smears or cultures are positive, the entire course of injections totalling 100,000 units is repeated. Apparently there need be no fear of undue reaction in such dosage, although recently some urticarial response has been observed. Undoubtedly more side effects will be observed in the future.

### *Summary*

The treatment of gonorrhea has made rapid strides in the last few years due to the development of the sulfonamides and of penicillin.

Hygiene and careful watching are more essential than ever in treatment.

The administration of sulfathiazole has all advantages of other sulfonamides, being efficient and cheap. It has the additional advantage that it may be administered while the patient is ambulatory and out of town.

The administration of alkalies is absolutely essential in conjunction with sulfathiazole.

If response is not secured after the administration of 20 gm., it is usually not wise to continue the administration.

Adequate initial dosage of the sulfonamides is essential to prevent sulfonamide resistance.

Penicillin has the advantage of being non toxic, though its administration presents certain technical difficulties.

Clinical cure is secured in most cases by the administration of 100,000 Oxford units, though it may require 2 or 3 times as much.

Doses of 10,000 or 20,000 units every 3 hours are more satisfactory than larger doses at longer intervals.

Smears have frequently been gonococci free after the administration of 40,000 units, but in all cases the full 100,000 units were given.

The patient must remain under supervision on a careful hygienic regime for a period of a month to six weeks.

Cultures and smears are essential to establish a cure.

### *References*

Doolittle, L. H., and Marshall, H. B.: Penicillin Treatment of Sulfonamide-Resistant Gonorrhea, *J. Urol.* 53:634-637 (Apr.) 1945.

Ezickson, W. J.: Personal communication to the author.

Herrell, W. E., Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide-Resistant Gonorrheal Infections, *J.A.M.A.*, 122:289-292 (May 29) 1943.

La Penta, R. G., Weckstein, A. M., and Sarnoff, H.: The Inadequacy of a Standardized Dosage of Penicillin, *J.A.M.A.*, 128:168-170 (May 19) 1945.

Petro, J.: Sulfonamide Resistance in Gonorrhea, *Lancet* 1:65-66 (Jan. 16) 1943.

Raines, S. L., Barrett, G. S., and Galt, J. M.: Report on the Use of Penicillin in Sulfonamide-Resistant Gonorrhea in the Male, *J. Urol.* 53:630-633 (Apr.) 1945.



## A STUDY OF STILLBIRTH DELIVERIES

EDWARD A. HOLROYD

*Assistant Resident Obstetrician  
Osteopathic Hospital of Philadelphia*

It is the purpose of this paper to examine some of the findings noted ante partum, interpartum, and post partum for possible causes of stillbirth deliveries, and to compare statistics of stillbirth at the Osteopathic Hospital of Philadelphia with those of the City of Philadelphia as a whole.

According to the Model Vital Statistics Act of 1941, a stillbirth is defined as follows: "Stillbirth means a birth after at least 20 weeks of gestation, in which the child shows no evidence of life after complete birth." A birth is complete when the child is entirely outside the mother, even if the cord is uncut and the placenta still attached. The words "evidence of life" include heart action, breathing, or movement of voluntary muscles.

Most authorities claim that approximately 4 per cent of infants die during birth. Some men put the proportion as high as five out of a hundred deliveries. The statistics of the Chicago Lying-In Hospital, covering 51,422 deliveries, indicate that 2.14 per cent are stillborn.

Pathologists performing autopsies on newborn children are amazed by the frequency of cerebral hemorrhage, of lacerations of the tentorium cerebelli, and of the falx cerebri. Other causes of death of the fetus during pregnancy are acute and chronic infections, poisoning—by eclampsia, uremia, chemicals or drugs—anemia of the mother, congenital deformities, and diseases of the fetus per se.

Due to the fact that so many fetal deaths result from asphyxia, it would be well to consider some of the causative factors.

### *Suffocation Asphyxia:*

- (1) Prolonged and severe contractions resulting in incomplete renewal of blood in the placental sinuses. (Promiscuous use of pitocin and pituitrin.)
- (2) Partial placental separation, or diminution of the placental area.
- (3) Direct compression of the placenta by the fetal head or trunk when the placenta is low lying.
- (4) Compression of the cord when it is prolapsed, and may be caught by the blades of the forceps. Knots in the cord.
- (5) Partial and complete abruption of the placenta.

- (6) Placenta praevia.
- (7) Narcosis (sedation).
- (8) Blocking of air passages after delivery by a tight caul, aspiration of mucous, blood or meconium, edema of the glottis and throat in face presentations, congenital atelectasis and heart disease.

#### *Paralytic Asphyxia:*

This phenomenon is usually caused by compression of the brain by hemorrhage or fracture, resulting from application of forceps, or from a contracted pelvis. This internal compression of the cardiac and respiratory centers causes asphyxia by directly paralyzing them. Paralysis of the vital centers may also occur from the use of barbiturates, morphine derivatives, ether, and other gas anesthetics.

A study at Chicago Lying-In Hospital covering a ten-year period revealed the following: Evidence of anoxia occurred more frequently than any other abnormal condition, it was most common when death occurred during labor, and was found with equal frequency in premature and full-term infants. Traumatic hemorrhage was believed to be the cause of death only half as often as anoxia. There were only four fatal cases of hemorrhagic disease among almost 28,000 babies. This is interesting in view of the recommendation for administration of Vitamin K to every pregnant woman prior to delivery. There were only six infants in whom evidence of syphilitic infections could be found. The commonest maternal causes of stillbirth are placenta praevia, and premature separation of the placenta.

At Chicago Lying-In they also discovered at autopsy that infants delivered with low forceps exhibited intra-cranial hemorrhage almost twice as often as those delivered spontaneously, and that this condition is the leading cause of death in the low forceps group. Mortality following breech delivery after appropriate corrections were made is over eight times that of natural cephalic delivery.

Cesarean section showed a high mortality of 5.3 per cent. The greatest single cause of death among infants in this group who were examined at autopsy was anoxia, and prematurity without pathological lesions was second. Mid forceps and high forceps increased the mortality four times that following low forceps. Incidence of stillbirths among multigravidas was 5.2 per cent, a considerably higher rate than among primigravidas (3.4 per cent). It has also been noted that the incidence of fetal mortality increased with advancing maternal age.

The following statistics on stillbirths in Philadelphia from October 1, 1937 through December 31, 1942 were gathered by the Obstetrical Society of Philadelphia, and classified according to the method of the Children's Bureau of the U. S. Department of Labor.



*Causes Determined in Fetus, Placenta and Cord*

1. Congenital malformations	246
2. Placenta and cord	600
a. Placenta praevia	74
b. Premature separation	315
c. Other placental conditions	45
d. Cord conditions	166
3. Birth trauma	351
4. Congenital syphilis	188
5. Infection other than syphilis	1
6. Erythroblastosis	9
7. Other causes determined in the fetus	92
a. Asphyxia	82
b. Polyhydramnios	8
c. Cranioschisis	1
d. Postmaturity	1

*Causes in Mother Associated with Fetal Death*

8. Tuberculosis	2
9. Diabetes mellitus	16
10. Pneumonia	12
11. Chronic diseases of circulatory system	6
a. Heart disease	2
b. Blood dyscrasia	1
c. Shock to mother	1
d. Death of mother	1
e. Anemia	1
12. Chronic diseases of genito-urinary tract, etc.	14
13. Acute diseases or conditions	555
a. Upper respiratory infection	2
b. Hydatiform mole	1
c. Pernicious vomiting	2
d. Metastatic carcinoma	1
e. Endocrine	15
f. Toxemia	534
14. Induced abortion	22
15. Therapeutic abortion	4
16. Late abortion	7
17. Missed abortion	2

18. Abdominal pregnancy	1
19. Multiple pregnancy	18
20. Siamese twins	4
21. Other conditions related to pregnancy, labor, and delivery	21
a. Ruptured uterus	13
b. Fibroid uterus	6
c. Uterine torsion	1
d. Artificial rupture of membranes	1
22. External violence	6
23. Prematurity due to colitis	4
24. Cause undetermined	1339

The number of cases analyzed in this group was 3520. Those particularly offering a challenge to the obstetrician are the deaths resulting from birth trauma (351), those due to toxemia in the mother (534), and those due to conditions peculiar to placenta and cord (600). The fact that in 1339 cases the cause was undetermined indicates the great need for more careful autopsy study, and for the intelligent preparation of reports for the stillbirth committee of this city.

Below is a report of the statistics gathered at the Osteopathic Hospital of Philadelphia covering a 3-year period from January 1, 1942 through December 31, 1944. The fetal mortality rate in this group is 2.63 per cent.

*Causes Determined in Fetus, Placenta and Cord*

1. Congenital malformations	7
2. Placenta and cord	22
a. Placenta praevia and premature separation	4
b. Other placental conditions	6
c. Cord conditions	12
3. Birth trauma	8
4. Syphilis	1
5. Other causes determined in the fetus	6
a. Asphyxia	5
b. Postmaturity	1
TOTAL	44

*Causes in Mother Associated with Fetal Death*

6. Tuberculosis	1
7. Diabetes mellitus	2



8. Acute diseases or conditions	5
a. Endocrine	2
b. Toxemia	3
9. Other conditions related to pregnancy, labor, delivery	1
a. Premature rupture of membranes with infection of the amnion	1
10. Cause undetermined	5
TOTAL	14
GRAND TOTAL	58

*A Comparison of Important Causes for Stillbirth Deliveries*

<i>City of Philadelphia</i>		<i>Osteopathic Hospital of Philadelphia</i>	
	Per Cent		Per Cent
Stillbirths (total)	2.61	Stillbirths (total)	2.63
1. Toxemia in mother	15.17	1. Toxemia in mother	5.17
2. Diseases of placenta and cord	17.04	2. Diseases of placenta and cord	37.93
3. Birth trauma	9.97	3. Birth trauma	13.79

In concluding this statistical report it should again be emphasized that there is a great need for autopsy study on all stillborn infants, plus accurate correlation of clinical findings, so that the cause of death may truly be diagnosed. Then, and only then, may the scientists who devote their time to medical research find means further to lower the incidence of fetal mortality.

*References*

- Tandy, E. C.: Instructions for Editing, Coding, and Tabulating Certain Data on Stillbirths, U. S. Department of Labor, Children's Bureau, (August) 1941.
- DeLee, J. B.: Principles and Practice of Obstetrics, Philadelphia, Pa., W. B. Saunders, (7th Edition) 1940, pp. 908-909.
- Potter, E. L. and Adair, F. L.: 1943 Yearbook of Obstetrics and Gynecology, Chicago, Ill., Yearbook Publishers, J. P. Greenhill, 1944, pp. 290, 291, and 292.
- Statistics presented before meeting of the Maternal Welfare Committee of Philadelphia, 1943.

## SPONTANEOUS RUPTURE OF THE URINARY BLADDER: AUTOPSY REPORT OF A CASE\*

OTTERBEIN DRESSLER

*Professor of Pathology in the College and Special Deputy Coroner  
City of Philadelphia*

Spontaneous rupture of the urinary bladder would appear to be of somewhat infrequent occurrence. Our interest was attracted in this case because we were unable to demonstrate any evidence of trauma to the body, nor evidence of tumor of the bladder, in short, no explanation for spontaneous rupture. We would judge that the bladder had become over distended and probably in the paroxysms of coughing the wall was broken through.

A-45-328

Died: 1-28-45, 4:45 P.M.

Autopsy: 1-29-45

### *Clinical Data*

"The deceased was found by his wife, apparently dead in his bed. He was taken to a hospital by police and was pronounced dead upon arrival. Cause of death unknown."

### *External Examination*

The body was that of a well built negro, said to have been 46 years old. His length was 66 inches and his weight was estimated as 145 pounds.

Frontal baldness was quite evident and there was a thin crop of hair about the margins of the cranium. The pupils were equal in size. Fecal vomitus was demonstrated about the mouth and there was a considerable quantity of oily material in this vomitus. There were no teeth in the upper jaw and the lower jaw showed some very poorly preserved teeth.

A number of scars were demonstrated about the left shoulder and a cicatrix was demonstrated about the left chest at the level of the eighth rib posteriorly. The abdomen was obviously distended.

There were no evidences of recent gross trauma and no evidences of caustic poisoning.

---

\* Case reported through the courtesy of Dr. Benjamin Gouley, Chief Coroner's Physician, City of Philadelphia.



*Internal Examination*

The subcutaneous fat was negligible in quantity.

The pericardial sac contained 5 cc. of amber fluid and showed many "milk spots" in the visceral layer suggesting previous attacks of rheumatic carditis.

The heart measured 16 x 11 x 8 cm. The greatest diameter of the thorax at the upper level of the diaphragm was 20.5 cm., with a cardio-thoracic ratio of 16/20.5. Upon opening of the heart no valvular lesions could be demonstrated and there were no evidences of syphilis of the aorta, nor of the aortic valve. The blood within the heart was hemolyzed so that it was unsatisfactory for serodiagnosis. The coronary arteries were remarkably well preserved with no evidences of occlusive disease.

The pleural cavities presented scattered adhesions reminiscent of previous inflammatory disease. A bullet of approximately 25 caliber was found in the pleura at the level of the eighth rib posteriorly at a point corresponding to the posterior axillary line. This eighth rib had been broken, the fragments had been displaced but healing was firm.

The lungs showed consolidation of the right upper lobe with abundant congestion and edema of all the other lobes. The exudate from the consolidated lobe presented many pus cells with encapsulated diplococci, identified as pneumococci. No acid fast bacilli were identified.

The esophagus contained fecal fluid and oily debris.

The stomach contained fecal debris and oil. There were no tumors and no ulcerative lesions of the stomach.

The intestines showed the phenomena of ileus paralyticus and all the coils were covered by bloody exudate. A total of 3300 cc. of bloody fluid was recovered from the abdominal cavity.

The colon presented complete paralysis and the serosa was covered by bloody exudate.

The gallbladder was distended but presented no other noteworthy lesions. This gallbladder emptied through the ampulla of Vater upon pressure.

The liver was 17 cm. tall and presented no gross lesions.

The pancreas presented no noteworthy lesions.

The spleen was characteristic of the negro and measured 7 x 5 x 2 cm. This organ presented no lesions.

The urinary bladder presented a ragged perforation in its roof. There were no evidences of tumor, no evidences of specific inflammatory disease.

The prostate was small and we experienced great difficulty in attempting to pass instruments through the urethra into the urinary bladder. Stricture of the urethra was evident.

The ureters were not dilated.

The kidneys measured respectively, left and right, 11.5 x 7 x 3.5 cm. and 10 x 6 x 3 cm. The capsules of the kidneys stripped with ease and

they showed good ratio of cortex to the medulla. There were no identified lesions of the kidney.

The suprarenal glands were well preserved and presented no noteworthy lesions.

#### *Anatomic Diagnosis:*

Lobar pneumonia, pneumococcic, right upper lobe.  
Foreign body of the left lung and pleura.  
Ruptured urinary bladder.  
Peritonitis.  
Ileus paralyticus.  
Probable urethral stricture.

#### *Cause of Death*

Ruptured urinary bladder with hemorrhage and peritonitis.

#### *Contributory*

Lobar pneumococcic pneumonia.

#### *Summary*

A case of spontaneous rupture of the urinary bladder is presented.

This spontaneous rupture of the urinary bladder was associated with pneumococcic lobar pneumonia and we would judge that spontaneous rupture probably occurred during one of the paroxysms of coughing.

The presence of stricture of the urethra might have accounted for over distension of the urinary bladder.



# OBSTRUCTIVE JAUNDICE DUE TO CARCINOMA OF THE AMPULLA OF VATER: AUTOPSY REPORT OF A CASE

OTTERBEIN DRESSLER  
*Professor of Pathology*  
and  
BOYD B. BUTTON  
*Associate in Pathology*

Autopsy No. A 43-270

Died 3-13-43, 5:34 P. M.

Autopsy 3-14-43, 9:30 A. M.

Carcinoma of the extrahepatic bile ducts, and of the pancreatic duct is infrequent. The least common site of this lesion is at the ampulla of Vater. Any tumor, benign or malignant, in this location will obviously result in early obstructive jaundice. The clinical appearance of the patient is similar to that seen in carcinoma of the head of the pancreas. Because of hemorrhage the operative mortality used to be high (18 per cent) but with the advent of vitamin K therapy this would tend to decrease. As these tumors cause symptoms when quite small, and as metastasis occurs very late, some of them should be amenable to surgical intervention.

## *Clinical Data*

The patient, a white female 68 years of age, entered the hospital complaining of jaundice and pruritus of two months' duration. The jaundice, and an associated diarrhea of dark soft stools, had become progressively worse. Several severe attacks of epistaxis had occurred shortly before admission. A 25 pound loss in weight had been noted.

Physical examination revealed a poorly nourished, jaundiced female with many petechial hemorrhages. The area of liver dullness extended three fingers breadth below the costal margin.

The blood count was essentially normal, the urinalysis was positive for the presence of bile, blood sedimentation by the Cutler method was 33 mm. for 1 hour, a Van den Bergh reaction was an immediate direct. An hippuric acid excretion test resulted in the excretion of 1.23 gm. of benzoic acid. The prothrombin time by the method of Howell was 10.5 minutes. This was shortened to 2 minutes by the administration of vitamin K.

The patient succumbed before operative procedures were tried. The provisional diagnosis was carcinoma of the head of the pancreas, or neoplasm of the liver.

### *External Examination*

The body was that of an elderly, emaciated female, said to be 68 years old. The body was deeply jaundiced all over. There were petechiae about the wrists. A midline incisional scar was evident above the pubes.

### *Internal Examination*

Twenty-five cc. of bile-stained fluid was present in the pericardial sac. The heart measured 10 x 8 x 6 cm. in situ and was brown in color. It weighed 240 gm. The right ventricle was soft and collapsed. The coronaries were very tortuous and contained areas of atheroma. The chief contents of the heart and great vessels were extensive "chicken fat" clots, extending up into the vessels of the neck and upper extremities. The iliac arteries and aorta contained many calcium plaques and atheromatous ulcers. These ulcers were stained a deep green by bile and stood out in startling contrast to the light yellow of the aortic wall. It was noted that this vessel lay further to the left than usual in the thoracic area.

The left hemothorax contained 200 cc. of bile-stained fluid. The right side contained 150 cc. of a similar fluid. Both lungs were adherent by fine adhesions to the parietal pleura on their lateral aspects, and at their apices. Interlobar adhesions were also present. The right lung was, in addition, adherent to the pericardium. Both lungs were hypostatic, showing a bile-stained froth on the cut surfaces, and a frothy, bloody exudate in the bronchi.

Examination of the abdominal contents revealed the omentum adherent to the abdominal wall along the line of the old incision. Twenty-five cc. of bile-stained fluid was present. All viscera were deeply jaundiced.

There was nothing noteworthy about the stomach or the small intestines. There were fine adhesions about the splenic flexure, and the sigmoid was adherent to the left pelvic wall, and to the uterus.

The liver weighed 1550 gm. It was bile-stained. The biliary ducts contained inspissated, green bile. There were areas of congestion and fatty degeneration throughout. The common bile duct and the hepatic duct were greatly distended, measuring 3 cm. in diameter. The gallbladder was not dilated. The cystic duct had thickened walls, and contained a thick green bile. No opening could be found from the common duct through the ampulla into the duodenum. The tissue about the ampulla was greatly thickened. The pancreas presented several cysts about 1 cm. in diameter in its body. The head of the organ was almost entirely represented by a mass of similar cysts. The pancreatic duct was enlarged, but an opening was found from it into the ampulla. The contents were bile stained.



The left kidney measured 10 x 6 x 3 cm. and weighed 200 gm. It was bile-stained, the cortex was thinned and the capsule stripped easily. The right kidney presented a similar appearance. It weighed 200 gm. and measured 11 x 5 x 4 cm. The bladder contained 450 cc. of bile-stained urine. The spleen was very soft, measuring 13 x 8 x 3 cm. and weighed 200 gm.

### *Microscopy*

Sections of the ampulla of Vater show a mass of anaplastic epithelial cells within the substance of the ampulla, with these epithelial cells arranged in grotesque glandular fashion. Invasiveness is quite obvious with some extension about the pancreatic duct, and about the common bile duct. It is our impression that this tumor is not derived from the pancreas, but rather is intestinal in origin.

Sections of the liver show wide spread fatty metamorphosis with changes due to hepatogenous and hematogenous pigmentation. Necrosis is demonstrated here and there, and there is invasion of inflammatory wandering cells about the biliary radicles. An increase of connective tissue is noted, particularly about the biliary canaliculi, giving this liver the characters of biliary cirrhosis which in this case we would judge to be obstructive in type.

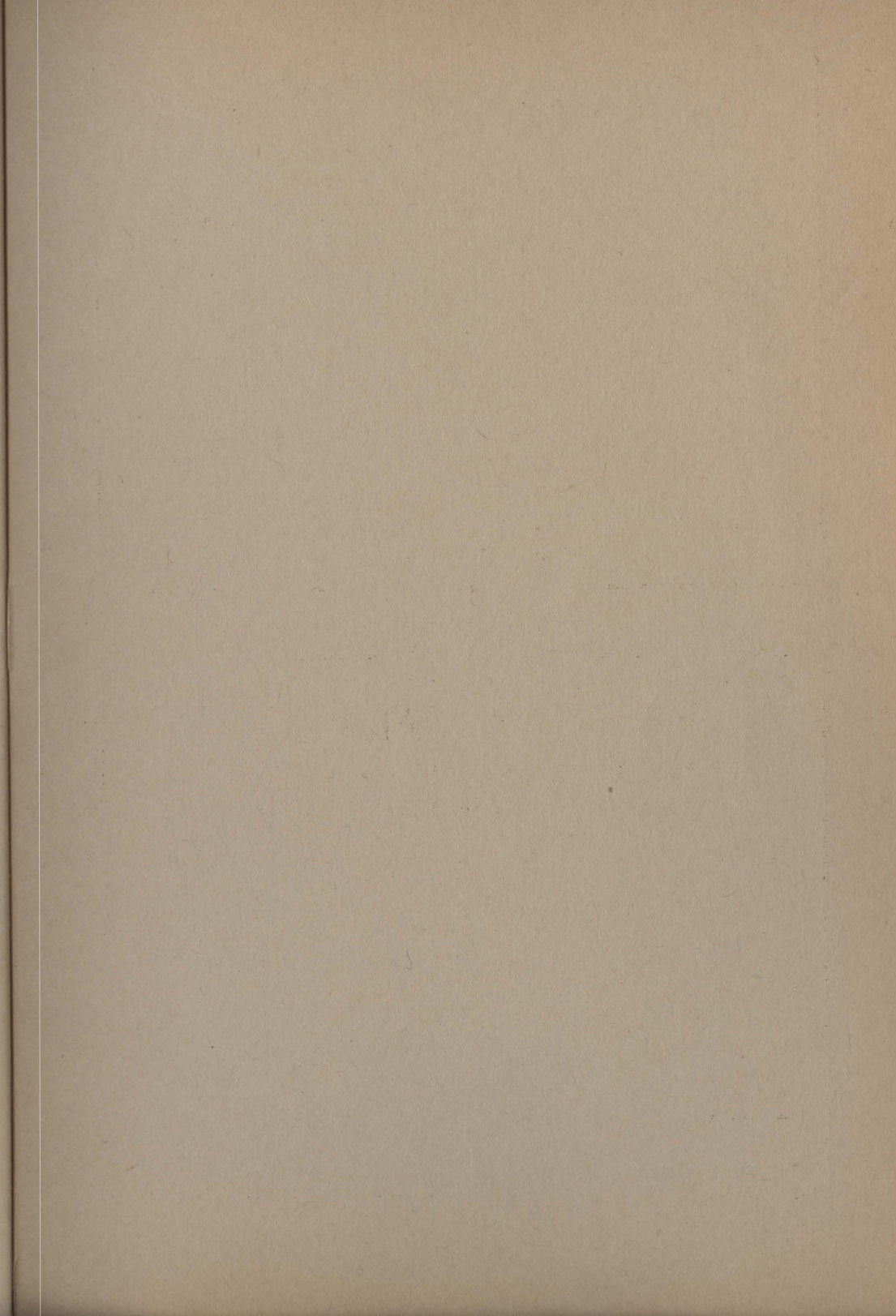
Sections of the heart muscles show the changes characteristic of brown atrophy.

### *Anatomic Diagnosis*

- Stenosis of the common bile duct due to pressure.
- Cysts of pancreas due to obstruction.
- Obstructive biliary cirrhosis of the liver.
- Adenocarcinoma of the ampulla of Vater.

### *Cause of Death*

- Adenocarcinoma of the ampulla of Vater.
- Contributory: Obstructive jaundice with biliary cirrhosis.





# SYNTHETIC ANATOMY

By J. E. CHEESMAN, London

THESE series of synthetic drawings provide a definite, composite and stereoscopic picture of every region of the body which can be studied step by step and part by part. The superimposed plates (7½" x 9") of which there are twelve to each part, are printed in six colors on transparent paper, and are provided with a key index. Owing to the clear transparency of the drawings, superficial and deep as well as the lateral relations can be perceived.

## LIST OF PARTS

1. Upper Arm and Shoulder
2. Forearm
3. Hand
4. Thigh and Hip
5. Leg
6. Foot
7. Thorax
8. Abdomen
9. Head and Neck
- 9(a). Pterygo-Maxillary Region
10. Brain
11. Perineum (Male)
12. Perineum (Female)

*The 13 parts \$25.00; separately at \$2.00 each*

**F. A. DAVIS COMPANY**

1914 - 16 CHERRY ST.

PHILADELPHIA 3

NEW (4th) EDITION

JUST READY

# INTERNAL MEDICINE

## ITS THEORY AND PRACTICE

*In Contributions by American Authors*

Edited by JOHN H. MUSSER, B.S., M.D., F.A.C.P.

Professor of Medicine in The Tulane University of Louisiana School of Medicine; Senior Visiting Physician to the Charity Hospital, New Orleans, Louisiana

*Large octavo, 1518 pages, illustrated. Cloth, \$10.00.*

This widely recognized work was originally produced to give the general practitioner in medicine a work comprehensive in its scope, yet concise in its presentation, and at the same time so documented that he could at once go to the source of material or to the outstanding contributions of medical literature for more detailed information. In this fourth edition this purpose has been well fulfilled. The material is well organized and its authorship vouches for its authority.

The numerous changes and additions deal for the most part with the newer therapies; the sulfonamides, penicillin, thiouracil and many others. A certain amount of space has been devoted to the problems of war medicine, notably in conjunction with the protozoan diseases and metazoan diseases and the acute infectious diseases. Military neuro-psychiatric disabilities, war neurology and altitude sickness all receive due attention. The chapters are prepared by prominent teachers of medicine.

**LEA & FEBIGER**

600 Washington Square

Philadelphia 6, Pa.